

## REMARKS

Claims 1-3, 5-7, and 9-21 are pending in the application.

In the Office Action, the Examiner objected to claims 1, 10, and 11 because of minor informalities. Claims 1, 10, and 11 have been amended to improve form, and it is believed that these claims are in compliance with the statute.

In the Office Action, the Examiner rejected claims 17-21 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,711,149 to *Araki*. This rejection is respectfully traversed for at least the following reasons.

Claim 17 recites a method for regenerating a particulate filter including, for example, performing closed loop control of a second temperature when a first temperature is above a first threshold, the closed loop control including delivering unburned hydrocarbons to a catalyst when the first temperature is above the first threshold temperature and the second temperature is below a second threshold temperature, and delivering reduced hydrocarbons to the catalyst when the second temperature is above a third threshold temperature different from the second threshold temperature. This method is neither taught nor suggested by *Araki*.

*Araki* discloses a device for purifying exhaust gas of a diesel engine. As shown in Fig. 1, the device of *Araki* has a filter 4 for collecting particulates in exhaust gas, a catalyst 5 upstream of the filter 4, a diesel fuel supply unit 6, and an electric heater unit 7. The device determines whether a temperature  $T_{in}$  of the exhaust gas flowing into the filter 4 is equal to or higher than a first predetermined temperature  $T1$ . When  $T_{in} < T1$ , the heater 7 is turned on. When  $T_{in} \geq T1$ , the heater 7 is turned off. Then the diesel fuel supply unit 6 is operated. Next, the device determines if an average temperature  $T_a$  of

$T_{in}$  and  $T_{out}$ , which is a temperature of the exhaust gas flowing out from the filter 4, is equal to or higher than a second predetermined temperature  $T_2$ . When  $T_a \geq T_2$ , the diesel supply unit 6 is stopped. Thus, *Araki* discloses a device that starts a diesel fuel supply when an inlet exhaust gas temperature is equal to or higher than a first predetermined temperature and stops the fuel supply when an average temperature of the exhaust gas is equal to or higher than a second predetermined temperature.

In the Office Action, the Examiner asserted that *Araki* discloses closed loop control of the second temperature ( $T_a$ ) when the first temperature ( $T_{in}$ ) is above a first threshold ( $T_1$ ). *Araki*, however, fails to teach or suggest a method for regenerating a particulate filter including performing closed loop control of the second temperature when the first temperature is above a first threshold, the closed loop control including delivering unburned hydrocarbons to the catalyst when the first temperature is above the first threshold temperature and the second temperature is below a second threshold temperature, and delivering reduced hydrocarbons to the catalyst when the second temperature is above a third threshold temperature different from the second threshold temperature, as recited by claim 17. While the device of *Araki* starts a fuel supply under one condition and stops the fuel supply under another condition, it does not reduce a fuel supply to control the second temperature. The device of *Araki* simply uses an on-off fuel supply unit. Therefore, the rejection of claim 17 should be withdrawn, and claim 17 should be allowed over *Araki*.

Claims 18-21 depend from claim 17, and those claims should also be allowed at least by reason of their dependency from claim 17.

In the Office Action, the Examiner rejected claims 1-3, 6, 7, and 9-16 under 35 U.S.C. § 103(a) as being unpatentable over *Araki* in view of U.S. Patent No. 5,839,273 to *Maus*. The Examiner also objected to claims 4, 5, and 8 as being dependent upon a rejected base claim, but stated that those claims should be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Although the rejection of claims 1-3, 6, 7, and 9-16 is believed to be unwarranted, to expedite prosecution, claim 1 has been amended to incorporate the subject matter of claim 4 in improved form, and claim 7 has been amended to incorporate the subject matter of claim 8 in improved form. Thus, the rejection of claims 1 and 7 and their dependent claims 2, 3, 6, and 9-12 should be withdrawn in favor of allowance of the claims. Claim 5 depend form claim 1, and it should also be allowed.

Claim 13 recites a method for regenerating a particulate filter including, among other elements, delivering unburned hydrocarbons to a catalyst when a first temperature is above a first threshold temperature and a second temperature is below a second threshold temperature, and delivering reduced hydrocarbons to the catalyst when the second temperature is above a third threshold temperature different from the second threshold temperature. As explained in the reasons for allowance of claim 17, *Araki* does not teach or suggest a method including delivering a reduced fuel supply.

*Maus* does not remedy the deficiency of *Araki*. In the Office Action, the Examiner relied on *Maus* for its disclosure of feeding of fuel and air no earlier than when a certain temperature is attained at an electrically heatable portion. *Maus*, however, fails to teach or suggest the claimed method including delivering reduced hydrocarbons to the catalyst when the second temperature is above a third threshold temperature different

from the second threshold temperature, as required by claim 13. Thus, the rejection of claim 13 under 35 U.S.C. § 103(a) should be withdrawn, and the claim should be allowed.

Claims 14-16 depend from claim 13, and those claim should also be allowed at least by reason of their dependency from claim 13.

Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: September 2, 2004

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**Attachments:** Two sheet of replacement drawings (Figs. 1 and 2).